

SECRET
a nonmagnetic spacer layer,
first and second ferromagnetic layers separated by the
nonmagnetic spacer layer, the first ferromagnetic layer has
a magnetization direction at an angle relative to a
magnetization direction of the second ferromagnetic layer at
zero applied magnetic field, the second ferromagnetic layer
comprising first and second ferromagnetic films
antiferromagnetically coupled to one another and an
antiferromagnetically coupling film located between and in
contact with the first and second ferromagnetic films for
coupling the first and second ferromagnetic films together
antiferromagnetically so that their magnetizations are
aligned antiparallel with one another and remain antiparallel
in the presence of an applied magnetic field, the magnetization
of the first ferromagnetic layer freely rotating in signal
magnetic field; and

an antiferromagnetic layer disposed in contact and exchange
coupled with one of the ferromagnetic films, a closed packed
plane of the antiferromagnetic layer being oriented so that
a half-value width of the diffraction peak from the close-
packed plane of the antiferromagnetic layer in its rocking
curve is 8 or less.

29. A magnetoresistance effect element, comprising:

a magnetoresistance effect film, having a nonmagnetic spacer
layer, and

first and second ferromagnetic layer separated by the nonmagnetic spacer layer, a magnetization direction of the first ferromagnetic layer being at an angle relative to a magnetization direction of the second ferromagnetic layer at zero applied magnetic field, the second ferromagnetic layer comprising first and second ferromagnetic films antiferromagnetically coupled to one another and an antiferromagnetically coupling film located between and in contact with the first and second ferromagnetic films for coupling the first and second ferromagnetic films together antiferromagnetically so that their magnetizations are aligned antiparallel with one another and remain antiparallel in the presence of an applied magnetic field, the magnetization of the first ferromagnetic layer freely rotating in signal magnetic field;

a pair of electrodes coupled to the magnetoresistance effect film and having respective inner edges; and

a pair of longitudinal biasing layers for providing bias magnetic fields to the first ferromagnetic layer in parallel with a longitudinal direction of the first ferromagnetic layer and having respective inner edges, wherein the inner edges of the pair of electrodes are disposed between the inner edges of the pair of longitudinal biasing layers.

30. A magnetoresistance effect element, comprising:

a nonmagnetic spacer layer;

first and second ferromagnetic layers separated by the nonmagnetic spacer layer, the first ferromagnetic layer having a magnetization direction at an angle relative to a magnetization direction of the second ferromagnetic layer at zero applied magnetic field, the magnetization of the first ferromagnetic layer freely rotating in a magnetic field signal, a magnetoresistance effect-improving layer comprising a plurality of metal films and disposed in contact with the first ferromagnetic layer so that the first ferromagnetic layer is disposed between the nonmagnetic spacer layer and the magnetoresistance effect -improving layer, one of the plurality of metal films disposed in contact with the first ferromagnetic layer contains metal element of not solid solution with metal element of the first ferromagnetic layer; and

a nonmagnetic underlayer or a nonmagnetic protecting layer disposed in contact with the magnetoresistance effect-improving layer so that the magnetoresistance effect-improving layer is disposed between the first ferromagnetic layer and the nonmagnetic underlayer or the nonmagnetic protecting layer.

31. A magnetoresistance effect head, comprising
a magnetoresistance effect element having a nonmagnetic spacer layer,
first and second ferromagnetic layer separated by the